United States Environmental Protection Agency
Region 1

No Further Action Decision Document
BA-4 Disposal Area

Camp Edwards
Massachusetts Military Reservation
Cape Cod, Massachusetts

August 2009

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No Further Action Decision Document
BA-4 Disposal Area

1.0 INTRODUCTION

This Decision Document describes the EPA decision to take no further action for the BA-4 Disposal Area site. The no further action decision was selected in accordance with Section 1431(a) of the Safe Drinking Water Act (SDWA), 42 USC §300i(a), as amended, and with the following Administrative Orders concerning response actions issued thereunder, U.S. Environmental Protection Agency Region 1 (EPA) Administrative Order No.s: SDWA-1-97-1019; SDWA-1-97-1030; and SDWA-1-2000-0014. The Regional Administrator of EPA Region I has been delegated the authority to select the necessary response action pursuant to EPA Delegation No. 9-17 (1200-TN-350) dated May 11, 1994. Documentation to support the no further action decision is contained in the Administrative Record.

The selected decision is that no further action is necessary for the BA-4 Disposal Area site to be protective of human health and the environment, based the findings that indicate there is no groundwater contamination related to the site and that a removal action conducted at the BA-4 Disposal Area site removed any soil contamination that could be a source of continuing contamination. According to the MassDEP, residual concentrations of contaminants remaining in soil pose no significant risk to health, safety, public welfare or the environment. In addition, no unexploded ordnance was found at the BA-4 Disposal Area.

2.0 SITE DESCRIPTION AND HISTORY

The BA-4 Disposal Area is located on the northern portion of the Massachusetts Military Reservation (MMR) known as Camp Edwards (Figure 1). It consists of two acres at the intersection of Pew Road and Pocasset-Forestdale Road. Portions of the BA-4 Disposal Area fall within the much larger training areas A-3, A-5 BA-4 and A-4 Area. It disposal area includes five areas of 2,500 to 6,500 square feet each (labeled Area A-E) and areas adjacent to, but just outside Areas A-E, that were investigated as potential disposal sites (Figure 2). The remainder of the BA-4 area outside of the disposal area is still under investigation.

According to the *Archives Search Report* (USACE, 1998), the first mention of activities at the BA-4 Disposal Area was in a 1959 document entitled *Standard Operating Procedures for Camp Edwards Facilities.* There were no other available historical documents that provide details regarding the area. Training areas, such as BA-4, were used for bivouac, convoy and other exercises. Ammunition also was transported in the vicinity of the BA-4 Disposal Area. One source interviewed as part of the *Archive Search Report* reported his belief that during his time as a former National Guardsman, excess rounds had periodically been buried in the proximity of the BA-4 Disposal Area. No other witnesses provided any information on the site.

3.0 INVESTIGATIONS

3.1 Soil

The investigation of the BA-4 Disposal Area was initiated as part of a survey to assess areas that were historically used for training or were potentially used as disposal areas. Survey sites were selected based on historical records and other archival information.

During the survey, ground-based geophysical investigations were conducted using a cart-mounted Geonics EM61 Mk2 electromagnetic induction sensor (EM61). Between August and October 2001, five areas (Areas A through E) in the BA-4 Disposal Area were investigated. These areas varied in size from 760 square meters to 2,000 square meters. Selection of the areas was based on analysis of historical aerial photographs and interviews conducted as part of the *Archives Search Report*.

Following the geophysical survey work in all five areas, 82 anomalies were investigated by excavating soil to uncover the source of the survey signal. Anomalies were selected for investigation based on signal strength and proximity to other anomalies. The majority of the materials recovered during the Areas B, C, and D anomaly investigations included miscellaneous metallic debris and scrap, such as nails, food and beverage cans, ammunition cans, railroad material, structural reinforcing bar, and packaging material. However, one practice grenade was recovered from Area D.

Based on the survey and sampling results, additional investigation was recommended and conducted at Areas A and E (Tetra Tech EM, Inc., 2003). Area A is approximately 2,000 square meters and Area E is approximately 760 square meters. An approximate 180 square meters is shared by Areas A and E. During the additional investigation, a total of 46 anomalies identified in these two areas were intrusively investigated. Two disposal sites were found: one in Area A where 312 expended jet starter cartridges and igniter tubes were found; and a second in Area E where a 55-gallon drum, which contained ash, burnt small arms and pyrotechnics, was found.

In September 2001, the cartridges and igniter tubes in Area A were removed along with the surrounding soil. The drum in Area E also was removed in September 2001 and transported to the staging area at Chadwick Road. The ash-containing drum was later transported off-site under RCRA waste code MA01 on manifest number MA F 061116.

Discrete soil samples were collected from both disposal sites. In Area A, samples were collected from the fill material surrounding the starter cartridges and the native soil at the bottom of the excavation. At the Area E excavation, discrete soil samples were taken of the soil surrounding the recovered items, the ash material inside the drum, and the natural bottom of the excavation. All samples were analyzed for explosives, semi-volatile organic compounds (SVOCs), nitrogen compounds, and metals. The Area E samples also were analyzed for dioxins and furans. After sampling, the bottoms of the excavations were covered, the pits were backfilled with the excavated soil and the footprints mapped using GPS coordinates.

Sample results showed lead concentrations in Area A backfill material and dioxin and several metals from the ash sample collected in Area E exceeded the Massachusetts Department of Environmental Protection's (MassDEP) Method 1 S-1/GW-1 cleanup standards.

Based on soil sampling results from Areas A and E, additional work was recommended at the BA-4 Disposal Area. This additional work included geophysical surveys in three areas: (1) approximately 30 meters to the north of Area E; (2) east of Area A; and (3) west of Area B and south of Area C. Anomalies identified during the initial work (Tetra Tech, 2003) were selected for intrusive investigation. In conjunction with the work to complete the intrusive investigation, a Rapid Response Action was conducted to remove lead-impacted soil from Area A and dioxin-impacted soil from Area E.

3.2 Groundwater

Groundwater monitoring wells had not been installed specifically for the BA-4 Disposal Area prior to 2006. However, it was determined, through groundwater modeling that two previously installed well screens were in the proper location to monitor groundwater from the BA-4 Disposal Area. Wells screens MW-84M2 and MW-84M3 were installed in 1999 to assess whether contamination was migrating off base. These well screens are located approximately 4,000 feet downgradient from the BA-4 Disposal Area and, based on backward particle tracks, are located at the proper elevation to detect contamination if it were migrating from the BA-4 Disposal Area (Figure 3). These wells have been regularly monitored for explosives and perchlorate since 1999 and there have been no detections in either MW-84M2 or MW-84M3. Time lines also were developed to show the length of time in years that it would take for a particle to move from the BA-4 Disposal Area to MW-84. These indicated that contamination from the site would have reached MW-84M2 or MW-84M3 within seven years from the time of deposition.

In addition, a water supply well located in the immediate vicinity of the BA-4 Disposal Area (ASPWell) has been sampled for an extensive list of analytes, including metals, since 1999. The only contaminant above drinking water standards was lead, which was detected at concentrations up to 53 µg/L (July, 1999). It was thought that the lead detections were due to materials used to construct the well. In May of 2002, a new drinking-water supply well was installed approximately 30 feet east of the existing well. Since this new well (ASPWell_2002) was installed, there have been no exceedances of drinking water standards. The maximum lead detection at this location was 4.82 µg/L (September, 2002), which is below the state drinking water action level of 15 ug/L.

In October, 2006, the Impact Area Groundwater Study Program installed a groundwater monitoring well (MW-469M1) at the location of the former ASPWell. Lead has not been detected during annual sampling since its installation.

In October, 2006, a drive point (DP-464) and a monitoring well (MW-478S) were placed in the vicinity of Areas A and E and sampled for total and dissolved metals and lead respectively. Lead has not been detected in the drive point or the monitoring well.

4.0 FINDINGS

Sample results were compared to several screening tools in order to determine if the concentration found in soil or groundwater presented a risk to human health or the environment. Background values were used to determine which analytes are naturally present in soil or groundwater and at what levels. Soil screening levels (SSLs) were developed as initial screening values for the IAGWSP investigation. They are to help determine if the detection of an analyte is above a concentration that requires additional

leaching analysis. USEPA Region IX preliminary remediation goals (PRGs) are current approved or provisional toxicity values, conservative exposure factors, and risk limits. Analytes with maximum concentrations exceeding these levels were retained as COPCs. Massachusetts Contingency Plan (MCP) Method 1 S-1/GW-1 standards provide default soil and groundwater concentrations that have been determined to be protective of human health and the environment. In some cases, background and SSLs can be above PRGs.

4.1 Soil

Area A Disposal Location – Two discrete soil samples were collected and analyzed from Area A: one from the fill material surrounding the starter cartridges and one from the native soil at the bottom of the excavation.

In the analysis of the sample from the fill material, lead (461 J mg/Kg) was the only metal that exceeded its Massachusetts S-1/GW-1 standard of 300 mg/Kg. Explosives were non detect. Nitrogen (as ammonia) and the SVOCs were below screening levels or non detect.

In the analysis of the sample from the native soil, there were no detections above the Massachusetts S-1/GW-1 standards. Arsenic and iron were the only metals exceeding their MMR Preliminary Remediation Goals (PRGs). Explosives were non detect. Nitrogen (as ammonia) and the SVOCs were below screening levels or non detect. Nitrates and nitrites along with the metals calcium, copper, magnesium, potassium and zinc exceeded background levels, but were below all other screening levels.

Area E Disposal Location - Three discrete samples were collected and analyzed from the Area E; one from the soil surrounding the recovered items, one from the ash material in the drum and one from natural bottom of the excavation.

Dioxin, which appears to have resulted from a burning activity, was detected in the ash sample above its Massachusetts S-1/GW-1 standard. The metals arsenic, barium, cadmium, lead, and zinc also exceeded their Massachusetts S-1/GW-1 standards. Acetone, the other VOC detected, and, the SVOCs, Bis (2-ethlylhexyl) phthalate and Di-n-butyl phthalate, were well below all screening levels.

There were no detections above Massachusetts S-1/GW-1 standards in the fill material soil sample at the Area E disposal site. Explosive compounds were non detect and the only volatile organic compounds (VOCs) (acetone and 4-methyl-2-pentanone) and the SVOC ((Bis (2-ethylhexyl) phthalate)) were well below all applicable screening values. The SVOC hexachlorobenzene (406 µg/Kg) exceeded its MMR PRG of 303.99 µg/Kg. Chloromethane and 2,6-DNT, detected in the ash from the drum, were not detected in the fill material and dioxin was detected below the S-1/GW-1 standard of 4 ng/Kg. Barium, cadmium, calcium, and zinc were detected above background.

There were no detections above Massachusetts S-1/GW-1 standards in the sample collected from native soil at the base of the excavation at Area E. Explosive compounds were non detect and the only VOC (acetone) and the SVOC ((Bis (2-ethylhexyl) phthalate)) were well below all applicable screening values. Dioxin was detected below

the Massachusetts S-1/GW-1 standard of 4 ng/Kg. The metals barium, cadmium, calcium, copper, lead and zinc were detected above background.

Area C Disposal Location - Two discrete soil samples also were collected from beneath the wooden box in which 105 mm cartridge cases with live propellant igniter tubes were found in Area C about 9 months before BA-4 Disposal Area fieldwork was conducted. One sample was collected at a depth of 0.3 meters below ground surface (bgs) and the other sample was collected at a depth of 0.5 meters bgs. Both samples were analyzed for explosives. No explosives were detected above laboratory detection limits in either soil sample.

4.2 Groundwater

Results from groundwater samples collected from MW-84M2 or MW-84M3, ASPWell, ASPWell 2002, MW-469M1, DP-464 and MW-478S were non detect for explosives and perchlorate; and all SVOCs, VOCs and metals were below the MCP Method 1 GW-1 standards, with the exception of an exceedence of lead in ASPWell. Those detections are believed to have resulted from well construction materials. Detections in the new ASPWell 2002 have all been below MCP Method 1 GW-1 cleanup standards. Sampling results from MW-469M1 drilled at the location of the former ASPWell have all been nondetect for lead.

In the ASPWell, copper, bromodichloromethane and chloroform were above the PRG levels. However, those findings are not likely the result of disposal activities at BA-4. The copper detection is likely from the materials used to construct the well and water supply system. The bromodichloromethane is likely a laboratory contaminant or related to disinfection of the well after construction. Low level chloroform detections are common in groundwater samples in the Upper Cape.

Iron and manganese were reported in drive point groundwater samples collected at Area A at concentrations above PRGs. These detections are likely the result of naturally occurring background concentrations of these metals. Chloroform was detected in monitoring well MW-84 at levels above the PRG. As mentioned previously, chloroform is commonly detected in groundwater and is likely not from disposal activities at BA-4.

5.0 SCOPE AND ROLE OF THE BA-4 DISPOSAL AREA RESPONSE ACTIONS

Based on soil investigations and geophysical surveys, a Rapid Response Action was conducted at the BA-4 Disposal Area in August 2006. It included the removal of contaminated soils from Areas A and E, along with intrusive investigations to identify anomalies detected during the geophysical surveys (Figure 4).

5.1 Area A Action

In August 2006, lead-impacted soil in Area A was excavated. The initial excavation consisted of removing soil from an approximate 16 ft by 18 ft area. During that excavation, expended jet engine starter cartridges and igniter tubes were observed in the eastern sidewall outside of the proposed excavation boundary. Additional excavation of an area of approximately 8 ft by 8 ft by 10 ft deep was conducted to recover these cartridges. No UXO were encountered during intrusive operations.

Approximately 85 tons of excavated soil were removed and temporarily stockpiled near the excavation. The soils were later disposed of off-site at the Waste Management Facility in Taunton, Massachusetts. The cartridges and igniter tubes were secured in a drum, transported to the Holding Area and later disposed of off site.

Five confirmatory samples and one duplicate sample were collected. Confirmatory sampling results indicated the impacted soil had successfully been removed. The excavation was backfilled in October 2006. The excavation was lined with polyethylene sheeting and backfilled with approximately 67 tons of 3 inch minus gravel material from the P.A. Landers Coleman Pit Site (PA Landers) in Sandwich, Massachusetts.

5.2 Area E Action

In May 2007, dioxin-impacted soil in Area E of the BA-4 Disposal Area was excavated. The initial excavation removed soil from a 6 ft by 3 ft by 5 ft deep area. At approximately four feet below ground surface (bgs), two expended jet engine starter cartridges and nine rubber boots were observed on the east wall of the excavation. These items were recovered and drummed at the work site. Soil also was excavated from a 6 ft by 3 ft by 5 ft deep area to the west of the other excavation. No UXO were encountered during intrusive operations.

The final Area E excavation dimensions were approximately 6 ft by 6 ft and 5 ft deep. A total of approximately 10.5 tons of soil was excavated and disposed of off site.

In July 2007, the excavation was backfilled with 3-inch minus gravel from PA Landers in Sandwich, Massachusetts.

5.3 Area A Confirmatory Soil Sampling and Analysis

A total of six 30-point multi-increment samples were collected in Area A prior to backfilling the excavation. These samples included four sidewall samples, one bottom sample, and a bottom sample duplicate. In addition to the soil samples from the excavation, two blank samples (Ottawa sand and Play sand) also were analyzed. The 30-point multi-increment composite samples were ground in a puck mill grinder following the Cold Regions Research and Engineering Lab method. Samples were then analyzed for perchlorate and metals, including mercury.

Perchlorate and mercury were not detected at concentrations exceeding the laboratory reporting limits. Concentrations of all other detected analytes, including lead which had concentrations ranging from 1.2 to 11 mg/Kg, were below the MMR Site Specific PRGs and Massachusetts Method 1 S-1/GW-1 standards. Soil sampling results confirmed no further soil removal was necessary and the excavation was backfilled.

The analytical suite for the initial samples collected from the BA-4 Disposal Area site included explosives. Because no explosives were detected in any of those samples, explosives were not considered a compound of potential concern. Therefore, the post-excavation confirmatory samples were not analyzed for explosives.

5.4 Area E Confirmatory Soil Sampling and Analysis

On May 16, 2007, confirmatory soil sampling was conducted at Area E. One multi-point soil sample and two replicate samples were collected from each sidewall and the base of excavation for a total of five samples. Each sample was comprised of 30 separate points collected from a depth of 0 to 3 inches. Samples were analyzed for dioxin. Results, ranging from 0.0046 to 13.466 picograms per gram, were below the Massachusetts Method 1 S-1/GW-1 cleanup standard of 20 picograms per gram. Soil sampling results confirmed no further soil removal was necessary. The excavation was backfilled with clean material in July 2007.

6.0 RISK EVALUATION

Activities at the BA-4 Disposal Area led to detectable levels of several analytes in the soil. These included increased levels of several metals, dioxin, some VOCs and SVOCs. There are no indications of any groundwater contamination at the BA-4 Disposal Area. This is consistent with the conceptual site model.

The contaminated soil, along with the buried items discovered, were removed and disposed of off-site. Results of post-excavation confirmatory soil sampling indicate that remnants of a few metals (arsenic, iron, lead, manganese, and molybdenum) and dioxin still exist in soil at levels that exceed soil screening levels.

The site-specific risk screening evaluation assessed the effectiveness of the soil removal action and the need for any additional remedial actions to prevent future risk to human health and the environment. The screening was conducted based on a comparison of the maximum post-excavation concentration of a contaminant detected in soil or groundwater to regulatory screening levels including MMR Preliminary Remediation Goals (PRGs) and Massachusetts Method 1 S-1/GW-1 Standards to evaluate the potential for human health and environmental impacts.

Post-excavation soil results were compared to screening criteria. Consideration was also given to whether a detected contaminant could be the result of some other source such as laboratory contamination or naturally occurring background conditions. All detected analytes were below the Massachusetts Method 1 S1/GW1 soil cleanup standards. These standards are protective of human health without the need for land-use restrictions. The Method 1 standards consider both direct contact and leaching to groundwater. The levels of the metals antimony, arsenic, iron, lead, manganese and molybdenum detected were above their MMR PRG soil screening levels but are very low, consistent with background concentrations, and are unlikely to present a leaching risk to groundwater.

Groundwater results were compared to applicable standards to assess potential future risks from exposure to groundwater. All groundwater results were below the Massachusetts Method 1 GW-1 groundwater cleanup standards. Copper, bromodichloromethane and chloroform were above the MMR PRGs in ASPWell 2002 and iron and manganese were above their PRGs in the drive point samples collected at Area A. Of these, copper is likely from well construction materials, bromodichloromethane is likely a laboratory contaminant and low levels of chloroform, iron and manganese are consistent with natural background concentrations of these metals.

7.0 COMMUNITY PARTICIPATION

Throughout the investigation and response action, the community and other interested parties have been kept apprised of activities at the site through informational meetings, fact sheets, press releases and public meetings.

Details of the *Archive Search Report* and interviews, surveys and findings and site specific soil and groundwater investigations and results were presented to the program's citizens' advisory committee, the Impact Area Review Team (IART). The team, now called the MMR Cleanup Team, has received regular updates on recent findings and activities. In addition to these regular briefings, an advertisement, news release, public meeting, presentation and 15-day public comment period were conducted on the BA-4 Disposal Area Rapid Response Action Plan in April 2006. Updates on the Rapid Response Action were provided throughout the project.

Similar briefings and updates also were provided to the Senior Management Board (SMB), which advises MMR organizations on environmental programs and policies. Members of the SMB include selectmen from the towns of Bourne, Falmouth, Mashpee, and Sandwich and representatives from the EPA, MassDEP, Massachusetts Department of Public Health, Massachusetts National Guard, the U.S. Coast Guard, and a representative from the Wampanoag Tribe.

An informal public comment period on this document was held from June 17 to July 17, 2009. A press release announced the comment period. No comments were received.

8.0 CONCLUSIONS

Historic disposal activities led to detectable levels of several analytes in the soil at the BA-4 Disposal Area. Monitoring wells MW-84M2 or MW-84M3 installed in 1999 have been consistently non detect for explosives, perchlorate and lead. One old metal well at the site did have detections of lead above the Massachusetts Method 1 S-1/GW-1 Standard. These detections were likely the result of well construction material. Following the well's replacement, the new well has had no exceedences of drinking water standards and other wells installed in the area have been non detect for lead.

The Soil Rapid Response Action, along with prior investigation activities, removed the contaminated soil. Post-soil-excavation confirmatory sampling results show that remnants of a few metals (arsenic, iron, lead, manganese, and molybdenum) and dioxin still exist in soil at levels that exceed MMR soil screening levels. The remaining metals and dioxin are not expected to pose a threat to groundwater because the metals are consistent with background levels, and the residual dioxin is below Massachusetts Method 1 S-1/GW-1 cleanup standards.

The post-excavation soil sample results are all below Massachusetts Method 1 S-1/GW-1 cleanup standards indicating that there is no significant risk of harm to human health, and the environment.

9.0 DECISION

The response activities conducted at the BA-4 Disposal Areas are protective of human health, the environment, and the aquifer. EPA has determined that the response activities have achieved the objectives set forth in SDWA § 1431(a), 42 U.S.C. § 300i, and the Administrative Orders. Therefore, EPA requires no further response actions with respect to the BA-4 Disposal Area site. This decision does not apply to the larger BA-4 area as investigations of the larger area have not been completed.

10.0 SUPPORTING DATA

Detailed information on the site is included in the *Final BA-4 Investigation Report* dated February 10, 2009, and the *Final BA-4 Source Area Rapid Response Action Completion of Work Report* dated February 10, 2009. Additional information is found in the Administrative Record for the site.

11.0 AUTHORIZING SIGNATURE

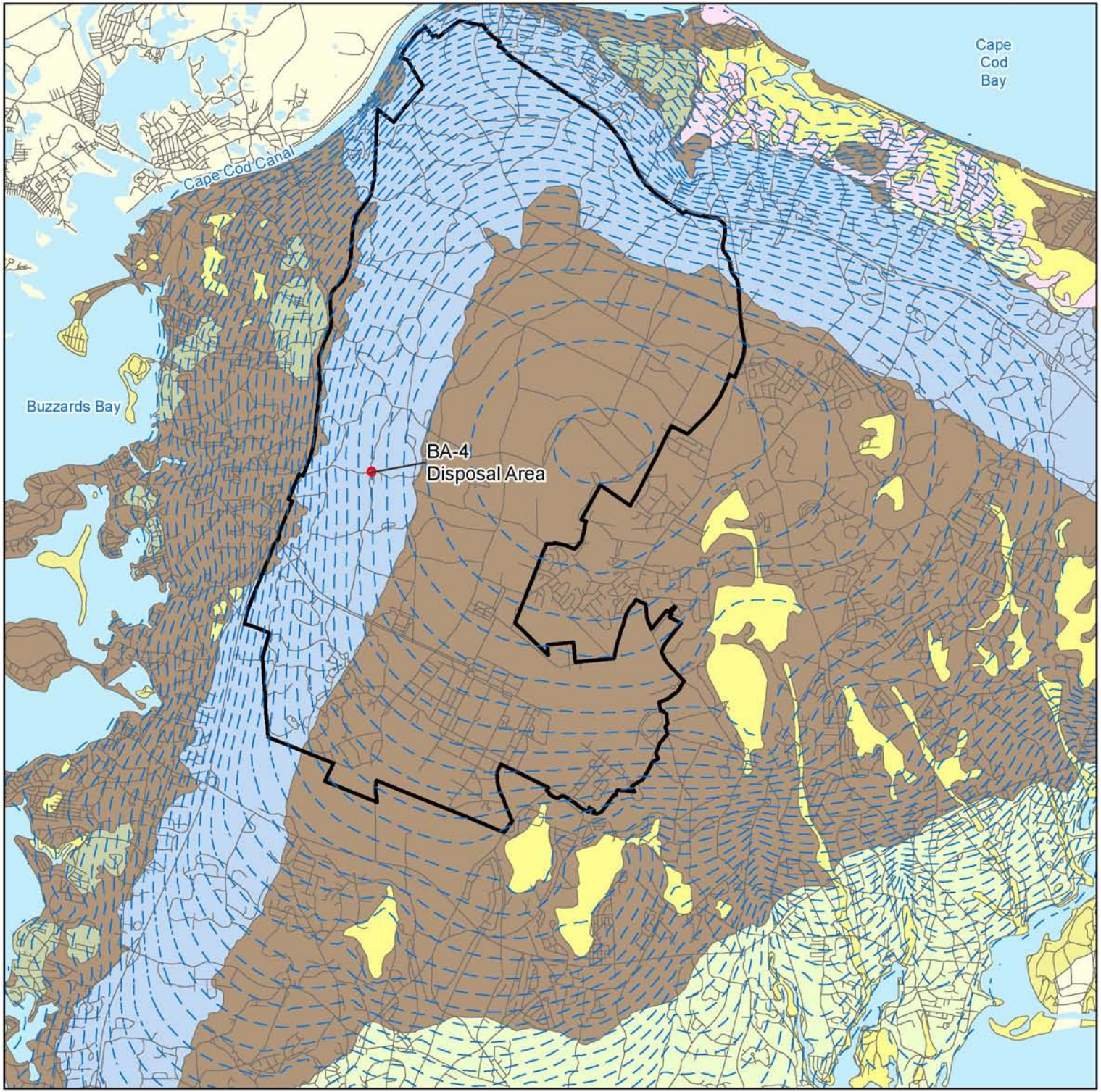
This Decision Document documents the determination that no further action is necessary to address contamination associated with the BA-4 Disposal Area. The determination was made by the U.S. Environmental Protection Agency under the authority of the Safe Drinking Water Act. The Massachusetts Department of Environmental Protection concurs with this decision.

U.S. Environmental Protection Agency

By: _____ Date: 9/29/09

Ira Leighton
Acting Regional Administrator
Region 1

FIGURES



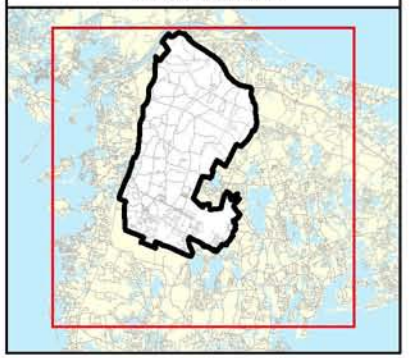
Impact Area
Groundwater Study Program

LEGEND

Surficial Geology

- Sand and Gravel Deposits
- Till or Bedrock
- Sandy Till or Sand
- End Moraines
- Large Sand Deposits
- Fine-Grained Deposits
- Floodplain Alluvium

LOCATION MAP



NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute
Topographic Maps: Source: MassGIS
Aerial Photos: Color Digital Orthophotos; Date Flown: 2002
Source: EarthData International

TITLE

BA-4 Disposal Area Location

0 1 Miles

N

US Army Corps of Engineers
New England District

FIGURE 1

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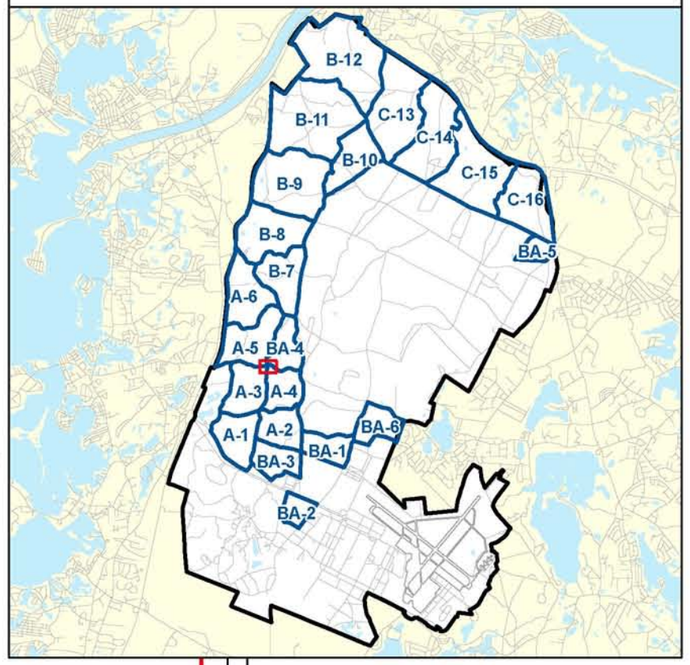
February 11, 2009 DWN: MW CHKD: DW

Impact Area
Groundwater Study Program

LOCATION MAP



A-5

BA-4

Excavation Area E

DP-464

AREA C

AREA A

AREA E

MW-469M1

ASPWELL

Groundwater Flow

MW-478S

Excavation Area A

AREA B

ASPWELL_2002

Pocasset Forestdale Road

Pew Road

AREA D

A-3

A-4

Legend

- BA-4 Disposal Area Boundary
- Training Areas
- Initial Investigation Areas
- Excavation Area
- RRA Geophysical Survey Area (Schonstedt)
- RRA Geophysical Survey Area (EM61)
- Excavated Anomaly (Schonstedt)
- Excavated Anomaly (EM61)
- Drive Point
- Monitoring Well
- Water Supply Well

TITLE

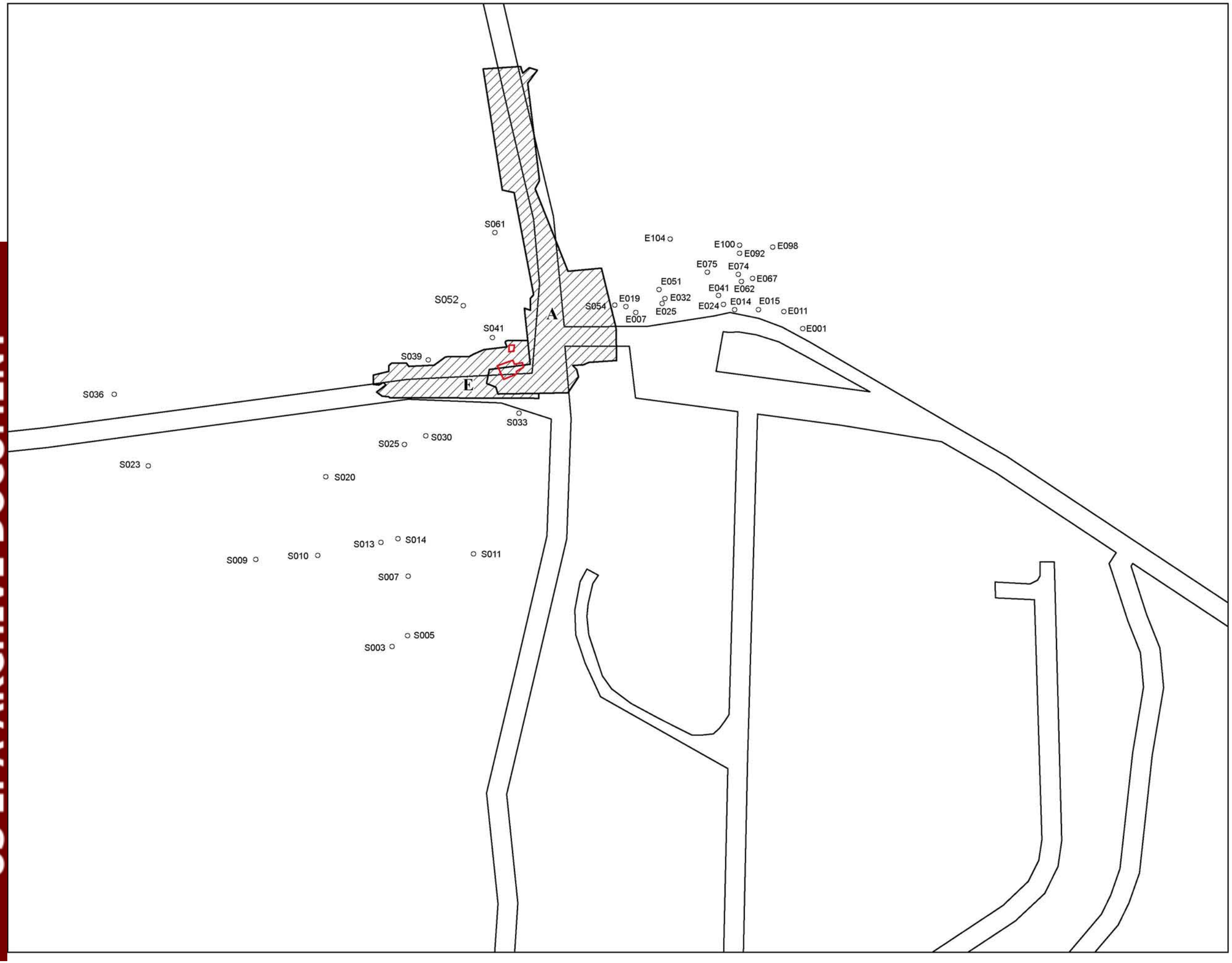
BA-4 Disposal Area
Geophysical and Groundwater
Investigation Areas

0 100 Feet

N

US Army Corps of Engineers
New England District

DRAFT

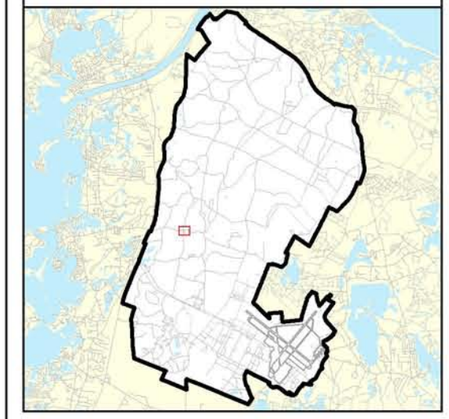


Impact Area Groundwater Study Program

Legend

- MSP2 Investigation Areas
- Soil Removal Area
- BA-4 Dig Location

LOCATION MAP



NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS
Aerial Photos: Color Digital Orthophotos:
Date Flown: 2002 Source: EarthData International

TITLE

BA-4 Disposal Area
Response Actions Location Map

0 100 Feet

N

US Army Corps of Engineers
New England District

DRAFT

FIGURE 3

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February 11, 2009 DWN: MW CHKD: DW

APPENDIX A

MassDEP Letter of Concurrence

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE
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DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

September 4, 2009

Mr. James T. Owens III, Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency,
New England Office
One Congress Street, Suite 1100
Boston, MA 02114-2023

RE: **BOURNE**
Release Tracking Number: 4-15031
Massachusetts Military Reservation (MMR)
BA-4 Disposal Area No Further Action Decision Document, Concurrence

Dear Mr. Owens:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the document entitled **"BA-4 Disposal Area No Further Action Decision Document"** (the "DD"), dated August 2009. The DD presents the response action selected by the U.S. Environmental Protection Agency (USEPA) for the BA-4 Disposal Area, located on Camp Edwards at the Massachusetts Military Reservation (MMR), situated in Bourne, Cape Cod, Massachusetts. The response action was selected by the USEPA in accordance with Section 1431(a) of the Safe Drinking Water Act (SDWA) and USEPA Administrative Order No. SDWA-1-2000-0014 (AO3) and includes consideration of the cleanup standards set forth under M.G.L. c. 21E and 310 CMR 40.0000, the Massachusetts Contingency Plan (MCP). The U.S. Army (Army) and the National Guard Bureau (NGB) are Respondents under USEPA AO3.

The BA-4 Disposal Area is located on the northern portion of Camp Edwards. It consists of two acres at the Intersection of Pew Road and Pocasset-Forestdale Road. Training areas such as BA-4 were used for bivouac, convoy and other military exercises. Ammunition was also transported in the vicinity of the BA-4 Disposal Area. The investigation of the BA-4 Disposal Area was initiated as part of a survey to assess areas that were historically used for training or were potentially used as disposal areas. The BA-4 Disposal Area was investigated based on analysis of historical aerial photographs and interviews conducted as part of the *Archive Search Report*. Following a geophysical survey, anomalies were investigated by excavating soil to uncover the source of the geophysical signal. Two disposal sites were found consisting of expended jet starter cartridges and igniter tubes, a 55-gallon drum containing ash, burnt small arms and pyrotechnics. These were removed along with the surrounding soil. Based on the investigation results, there are no munition items and no significant residual contamination remaining in the soil within the BA-4 Disposal Area that could potentially pose a threat to human health, safety, welfare or the environment. Approximately 85 tons of lead-impacted soil was excavated and properly disposed of at a waste management facility. The cartridges and igniter tubes were secured in a drum,

transported to a holding area and later disposed of off site. Confirmatory sampling results indicated the impacted soil had successfully been removed and the excavation was backfilled with clean fill material. In addition, there is no indication of groundwater contamination at the BA-4 Disposal Area. All groundwater results were below the MCP Method 1 GW-1 standards.

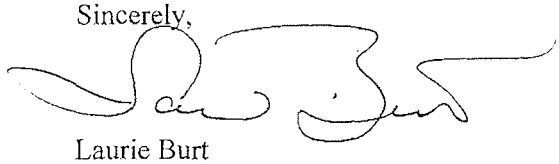
MassDEP's review of the analytical results, analysis, and supporting documentation contained in the Administrative Record indicates that no further response actions are necessary at the site in order to achieve the level of protection to public health, safety, welfare and the environment required under M.G.L. c. 21E and the MCP.

MassDEP concurs with the DD. MassDEP's concurrence with the DD is based upon representations made to MassDEP by the USEPA and the Army/NGB and assumes that all information provided is substantially complete and accurate. Without limitation, if MassDEP determines that any material omissions or misstatements exist, if new information becomes available, or if conditions at the BA-4 Disposal Area change, resulting in potential or actual human exposure or threats to the environment, MassDEP reserves its authority under M.G.L. c. 21E, the MCP, and any other applicable law or regulation, to require further response actions.

In addition, please be advised that MassDEP reserves all rights against the Army/NGB and all other persons to take any civil, criminal, or administrative action including, without limitation, the right to seek injunctive relief, the recovery of money expended or to be expended (plus interest), monetary penalties, criminal sanctions, and/or punitive damages, pursuant to M.G.L. c. 21E, the MCP, or any other applicable law and regulation. Nothing in this letter shall preclude MassDEP from taking any additional enforcement actions, including the issuance of Orders and/or additional actions, as MassDEP may deem necessary, or from requiring the Army/NGB to perform additional activities pursuant to any other applicable law.

Please incorporate this letter into the Administrative Record for the BA-4 Disposal Area at Camp Edwards, MMR. If you have any questions regarding this matter, please contact Leonard J. Pinaud, Chief of Federal Facilities Remediation Section, at (508) 946-2871 or Millie Garcia-Serrano, Deputy Regional Director of the Bureau of Waste Site Cleanup at (508) 946-2727.

Sincerely,



Laurie Burt
Commissioner
Massachusetts Department of Environmental Protection

LB/lp

MassDEP BA-4 Decision Document Concurrence Letter.doc

ec: David Johnston, Acting Regional Director
Millie Garcia-Serrano, Deputy Regional Director
Leonard J. Pinaud, Chief, Federal Facilities Remediation Section
Rebecca Tobin, Regional Counsel

Mark Begley, Environmental Management Commission
MassDEP Southeast Region
MMR Senior Management Board
MMR Plume Cleanup Team
Upper Cape Boards of Selectmen
Upper Cape Boards of Health

APPENDIX B

Acronyms and Abbreviations

ACRONYMS AND ABBREVIATIONS

2,4-DNT	2,4-Dinitrotoluene
AO	Administrative Order
COC	Contaminants of concern
EPA	United States Environmental Protection Agency
HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
IAGWSP	Impact Area Groundwater Study Program
MassDEP	Massachusetts Department of Environmental Protection
mg	Milligram
mg/Kg	Milligrams per kilogram
MMR	Massachusetts Military Reservation
OU	Operational Unit
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine
SDWA	Safe Drinking Water Act
SVOC	Semi-volatile organic compound
TNT	2,4,6-Trinitrotoluene